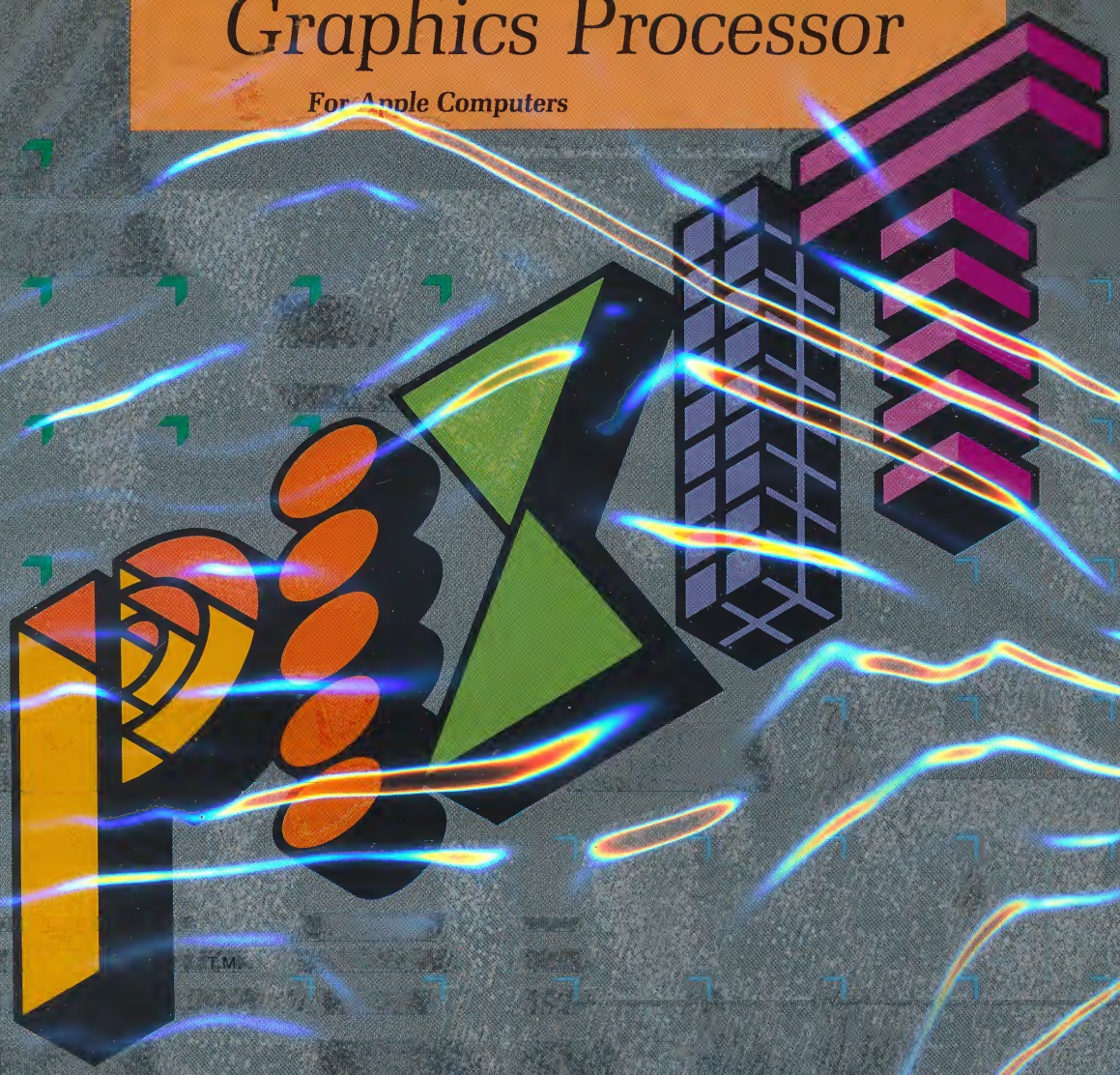
Graphics Processor

For Apple Computers



T.M.

BAUDVILLE

T.M.

Create A Shape
Create or modify pre-colored or standard HI-RES shapes using simple keystroke commands.

Picture Editor
Create a picture using mixed text and graphics, circles and lines, colorfill, and shape tables. Print the picture, save it to disk for use in other programs or for future editing.

Shape Table Editor
Combine up to 128 shapes in one table. Add or delete shapes anywhere in table.

User Shape Library
Build your own library of shapes.

PIXIT requires a 48K Apple II, Apple II+ or Apple IIe with ROM Applesoft and [illegible].

No additional hardware required.

Font Library
A variety of sizes and styles of upper and lower case text fonts.

PIXIT Shape Library
A convenient selection of pre-drawn shapes, including Education, business, family fun, arcade, communication, space, safety, 3-D geometric, cartoon characters, electronic symbols, music and textures.

Applications
Animation, charts and graphs, program development, slide shows, program titles, education, games.

No programming skills needed.
Works like a word processor for Applesoft shape tables.

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Baudville provides a limited [illegible] warranty on the recording media. The warranty does not apply to the software programs, which are provided AS IS.

Author's Note

The inspiration for PIXIT came while watching my 10 year old nephew in his attempt to compose a hi-res picture on his Apple. It was very frustrating to watch him plot objects on the screen using laborious Basic commands. Then have to do it all over again when things did not turn out quite like he had envisioned. It seemed to me the computer should take care of the tedious details and let the user concentrate on the creative process. I have tried to make PIXIT easy and fun to use without sacrificing some of the more serious features. I hope you get as much enjoyment from PIXIT as I have.

Michael Daroff

BAUDVILLE

Baudville, 1001 Medical Park Dr. S.E., Grand Rapids, Michigan, 49506, (616) 957-3036.

CS 001 Pi

PIXIT Graphics Processor

DMC

TM

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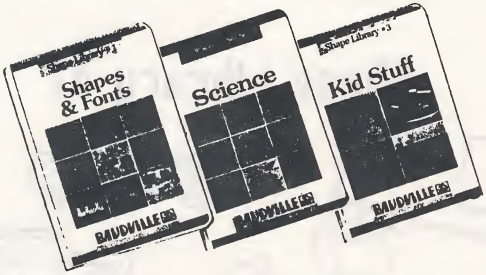
A sampler of the shapes on the disk.

SHAPE LIBRARIES



Each library contains pre-drawn shapes and text styles for numerous applications. These shapes can be used directly from your own Applesoft Basic programs or with TAKE 1, BLAZING PADDLES, or PIXIT.

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Shapes & Fonts

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– TEXT FONT

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- SCRIPT 10
- VERTICAL 10
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- TYPEWRITER 8
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– SPECIAL SHAPE TABLE FONTS

- * BRUSH STROKE 35
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– SHAPE TABLES

- ANIMALS
- ARCHITECTURAL
- BOTANY
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- CREATIVE SHAPES
- EDUCATION
- ELECTRONIC SYMBOLS
- GAME SET
- GEOMETRIC
- GREEK ALPHABET
- HOUSEHOLD
- ICONS
- INTERIOR DESIGN
- OCEAN SET
- RECREATION
- SPACE SET
- TERRAIN
- TOOLS
- TRANSPORTATION
- TREES
- ZODIAC

* Tables not included in Commodore 64 version.

Science

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– SHAPE TABLES

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- BRAIN ANATOMY
- BOTANY
- CHEMISTRY
- DIAGRAMMING
- * EAR ANATOMY
- EYE ANATOMY
- FISH
- FLOW CHARTING
- FRUITS
- GREEK ALPHABET
- MATH SYMBOLS
- PLANT CYTOLOGY
- * SOLAR SYSTEM
- SUBSCRIPTS
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- VEGETABLES

– HI RES PICTURE FILE

- BRAIN ANATOMY
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- EYE ANATOMY
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- TOOTH ANATOMY

Kid Stuff

CONTENTS

– TEXT FONT

- BOLD 6
- * FUN FONT
- HAPPY FONT

– SPECIAL SHAPE TABLE FONTS

- * BIG LETTERS
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- BUILDING BLOCKS
- CAMP
- CHARACTER ANIMALS
- COMPUTER PARTS
- DOLLS
- DROIDS
- FAMILY
- HOLIDAYS
- MONSTERS
- MUSIC
- NEIGHBORHOOD
- NUMBERS
- PLAYGROUND
- SAND BOX TOYS
- SIGNS
- TIME
- TOY CHEST

– HI RES PICTURE FILE

- * HOLIDAYS
- * NEIGHBORHOODS

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PIXIT, VERSION PX3

IMPORTANT ADDITIONS TO THE USER MANUAL

PIXIT, VERSION PX3, contains several added features that are not covered in the user manual (although they do appear on the program help screens). Please read carefully so that you do not overlook these useful features.

HOW TO USE THE PRINTER GRAPHICS DUMP

The PRINTER GRAPHICS DUMP routine in the Picture Editor will produce full-page printouts of the hi-res screen. When you select this option from the function menu, you will be prompted to make two choices. Generally, you will select WHITE AS BLACK with BLACK AND WHITE printers and WHITE AS WHITE with COLOR printers, but the opposite combinations can be used for an "inversed" effect. Make sure your printer is turned on and ready to print or the program will hang with a "TURN PRINTER ON" message. Once the printer has started, you can press the (ESC) key to stop the printout.

The routine is configured for the IMAGEWRITER printer with an Apple //c serial interface. PIXIT also supports many of the other popular printers and interface cards. Select CHANGE SET UP from the menu and follow the prompts to select your printer and interface card from the menu. When you have completed the selection, remove the write-protect tab from the disk and press (RETURN). When you are finished, be sure to replace the write-protect tab. Once the disk is configured for your setup, you will not have to change it again. DIP switches on the printer or card may have to be reset for satisfactory results, check your printer manual.

We have attempted to support the widest number of Apple users with this selection of printers and interface cards. If your printer/interface setup is not supported, there are several good graphics printing programs available. Zoom Graphix, by Phoenix Software, is highly recommended. If you have an interface card with built-in graphics commands (like the Grappler+), you can BLOAD your hi-res picture from Basic (don't forget the PI. prefix) and follow the directions for printing hi-res page 2 for your particular card.

THE PIXIT SLIDESHOW

There is an Applesoft program on your PIXIT disk called "PIXIT SLIDESHOW" that will display your hi-res pictures like a slide projector. To run this program, select QUIT from the PROGRAM MENU. When the] prompt appears, type: RUN PIXIT SLIDESHOW and press (RETURN). The program will ask you to type in the names of up to 10 hi-res pictures. Insert your data disk containing the pictures. Then press a number key corresponding to the picture you wish to display. Pictures may be displayed in any order.

KOALA PAD (TM) input to the PICTURE EDITOR

If you have a Koala Pad (or other input device such as joystick, trackball, etc.) connected to the game controller port, you can use it to draw freehand lines in the Picture Editor. When you are creating a hi-res picture and wish to use the Koala Pad, press the (G) key (for graphics pad). The status window will disappear and the entire hi-res screen will become visible. The cursor will reappear only when you touch the stylus to the pad. Use the stylus to move the cursor to the point where you wish to draw. Then press the left button on the pad and start drawing. As long as the left button is held down, the path you trace will appear on the screen. The color of the line will be the same as HCOLOR. Release the left button to stop drawing.

To draw a straight line, move the cursor to the point where you want the line to start and press the left button briefly to plot a single dot. Then move the cursor to the point where you want the line to end and press the right button. A straight line will be drawn between the two points. Each time you press the right button, a straight line is drawn from the last plotted point to the cursor position.

When you are finished drawing lines with the pad, press (RETURN) to "plant" the lines to the background. The (ESC) key can be used to back out the graphics pad mode and restore the picture to it's condition before the (G) key.

MIRROR IMAGE SHAPES in the PICTURE EDITOR

Before a shape is planted to the background, it can be flipped to face the opposite direction by pressing the (B) key (for backwards shape). The shape will remain that way until the (B) key is pressed again. This feature doubles the usefulness of the shapes in the Shape Library.

EDITING MOVES in CREATE-A-SHAPE

Here is a handy addition to the editing commands in Create-A-Shape. When you want to change a move in the middle of a shape file from plot to no-plot (or vice-versa), use the ( ) or ( ) keys to step through the file until you locate the move you want to change. Press (CTRL-P) to change the vector under the cursor. The cursor will then step forward to the next move in the file.

NOTES ON MAKING A BACK-UP COPY OF PIXIT

When transferring files from the PIXIT program diskette to your back-up diskette (see p. 35 of the User Manual), it is not necessary to copy the following files: START and DEMO1. These files are not used on the back-up copy, and because of the non-standard DOS, some file copy programs may not be able to properly read these files.

Grap

CS 001 Pi PIXIT Graphics Processor

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GRAPHICS PROCESSOR

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ASSISTING ARTISTS
KATIE RALSTON ROBERT GLASSER

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INTRODUCTION

WHAT IS PIXIT?

PIXIT is a very powerful but easy to use graphics development tool for the home hobbiest, educator, artist, animator, game developer, or anyone who wants to make use of Apple high-resolution graphics. PIXIT graphics processing will allow you to create professional quality computer graphics even if you have no programming skills, yet flexibility and utility are provided for the serious programmer as well. Some of the many features include:

A PICTURE EDITOR to create full-screen hi-res pictures using shapes, mixed text and graphics, circles and lines, and colorfill. Shapes can be displayed in different colors, scaled, rotated, and moved around — even across other shapes. Pictures can be saved to disk for use in other programs and dumped to a printer for hardcopy.

A CREATE-A-SHAPE program to design or modify shapes using simple keystroke commands. Magnified grid allows easy editing of fine details.

A SHAPE TABLE EDITOR to combine up to 128 shapes in one table. Add or delete shapes anywhere in the table. Splice together several shape tables into one large table.

The PIXIT Shape Library is a convenient selection of pre-drawn shapes that will let you create beautiful hi-res pictures.

The PIXIT Font Library has a variety of sizes and styles of hi-res text fonts with upper and lower case and proportional spacing.

A convenient load routine that automatically searches the disk and displays a selection of available files. You never have to type a filename when loading files from the disk.

All PIXIT shape tables and character fonts are completely compatible with Applesoft and DOS 3.3. Shape tables and hi-res pictures from other programs can be used with the PIXIT programs.

WHAT YOU NEED TO USE PIXIT

PIXIT requires an APPLE][, APPLE][+, or APPLE //e with at least 48K of RAM, Applesoft Basic in ROM, and 1 Disk Drive with DOS 3.3. PIXIT will also support a second disk drive on the same controller card.

A color monitor or TV is preferable, but a monochrome monitor will work fine with PIXIT.

If you have an EPSON MX-80, FX-80, MX-100, or FX-100 printer with GRAFTRAX option, you can print your hi-res pictures directly to the printer.

LEARNING TO USE PIXIT

You should carefully read through this manual, starting with the Tutorial and then the Short Primer on Apple Graphics. There is also a DEMO program which will show you some of the things that can be done with PIXIT. Every effort has been made to make PIXIT easy to learn and use. Most "wrong" moves have been anticipated and accounted for in program design. Occasionally you will get a "message" at the bottom of the screen telling you that something needs attention. These messages are explained at the end of this manual.

In this manual, a user response which requires a single keypress will be shown in inverse (white letters on a black background). For example M will mean press that key. Some commands require the use of the "control" key: CTRL-B means to press the CTRL key and the B key at the same time.

To make a selection from any of the PIXIT menus or sub-menus, simply press the ← or → keys until the desired option is displayed in inverse and then press RETURN to complete the selection. This same procedure is also used to change parameters on the editing screens.

Loading files from the disk is similar. When you select one of the LOAD options from the menu, PIXIT will scan the files on the disk and then display a list of filenames at the bottom of the screen. Use the ← or → keys to "scroll" through the list until the desired name is highlighted and then press RETURN to load that file.

If you accidently select the wrong menu option or decide to not load a file from the disk, you can press the ESC key to safely back out of a menu selection.

To save a file, you must have an initialized data diskette (see the DOS manual on how to initialize a disk). When you select a SAVE option from the menu, you will be prompted to type a filename. Any typeable character (except a comma) may be used in filenames. Always be careful when choosing a filename during a save. If you pick a name of a file that already exists on the disk, the existing file will be written over. You can use the CATALOG option to check the files on a disk before saving.

If you have two disk drives, always keep the PIXIT program disk in drive 1 and use drive 2 for your data diskette.

GETTING STARTED: A TUTORIAL

The best way to get acquainted with PIXIT is to take a quick run through the PICTURE EDITOR. In this tutorial you will learn about the PIXIT menus, and create a hi-res picture using just a few of the PICTURE EDITOR features. To get started, turn off the Apple, place the PIXIT diskette in drive 1 (label facing up), and turn the Apple on. When the drive stops you should see the following display on the monitor screen:

This is a menu of the programs available on PIXIT. The left and right arrows are used to choose a selection from the menu. Press the right arrow → key to highlight the next selection on the menu. Press the left arrow ← key to move backward through the menu. Try these keys a few times to see how this feature works. Now, press → until PICTURE EDITOR is displayed in inverse and then press RETURN to run the program.

PICTURE EDITOR

After selecting the PICTURE EDITOR from the program menu, the

disk will run for a few moments and then a new menu will appear on the screen:

This is the PICTURE EDITOR FUNCTION MENU. As with the previous menu, the ← and → keys are used to select the desired function. In order to create a new picture using the PICTURE EDITOR, we must first load the SHAPE TABLE and CHARACTER SET from the disk so that we have some tools to work with.

LOADING THE SHAPES

Select the LOAD SHAPE TABLE option on the menu. The disk will run for about three seconds and some new information will appear at the bottom of the screen:

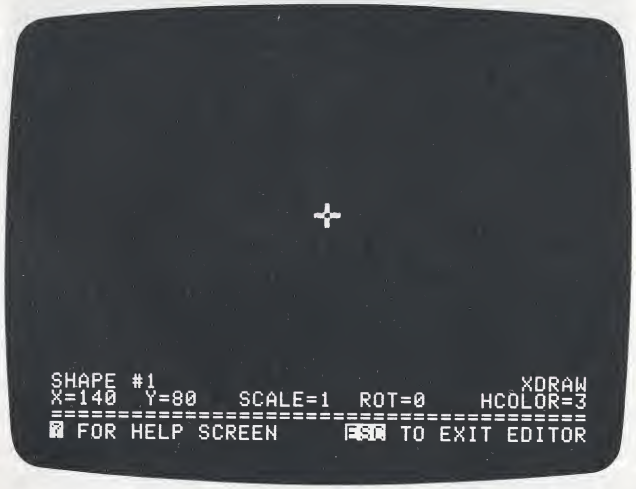
LOAD SHAPE TABLE: TUTORIAL SHAPES
ANIMALS
GEOMETRICS

This is a scrolling list of all of the shape tables available on this disk. Use the ← and → keys to scroll through the list until the desired selection is highlighted. Try pressing the arrow keys to view all of the names on the list. We are going to use the "TUTORIAL SHAPES" in our first picture. Select this name, then press RETURN. After the shape table is loaded from the disk, the LOAD CHARACTER SET option will be highlighted on the function menu. You will be adding text to the picture, so press RETURN to select this function. When the disk stops, a list of the available character sets

(or text fonts) will appear at the bottom of the screen. Select the "BOLD10" set from this list.

CREATE A PICTURE

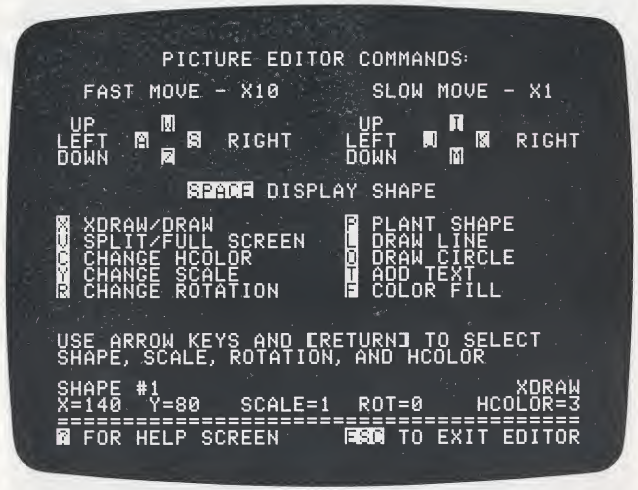
Now that the shape table and character set are loaded, you are almost ready to draw. Select the CREATE PICTURE function with the arrow keys and press RETURN. This will bring you to the picture editing screen:



The flashing cross in the center of the screen is the cursor (to help you locate your position on the screen). Near the bottom of the screen are two lines of information that give the current status of the screen. X and Y tell you the location of the cursor on the screen. If you are already familiar with Applesoft Basic, you should recognize XDRAW, HCOLOR, ROT, etc., as standard Applesoft words. The values shown on the status display are identical to those used in Applesoft hi-res graphics commands. If you have not used Applesoft, the status display and editor commands may be more difficult to master at first. Despair not, however, help is only a keystroke away!

THE HELP SCREEN

The very bottom line of the screen tells you what to do if you need help. Press the ? key once. The flashing hi-res cursor will be replaced by a list of the editor commands:



Rather than try to learn all of the commands at once, you will be using just a few of them to create your first picture. Press the ? key again to get back to the picture editing screen.

THE MOVE COMMANDS

There are two sets of keys that move the cursor (or a shape) around the screen. They are the W, A, S, Z keys and the I, J, K, M keys:

These keys move the cursor 10 pixels (or dots) in the direction of the arrow

These keys move the cursor 1 pixel (or dot) in the direction of the arrow

Try pressing each of these keys a few times and watch what happens to the cursor. Now press the S key repeatedly until the cursor disappears off the right hand side of the screen. Notice that it reappears on the left side of the screen. This feature is called "wrap-around" and it also works in the vertical direction. Also note that the values of "X" and "Y" in the status display change with each move of the cursor. X is the current horizontal screen coordinate: X=0 is the extreme left edge and X=279 is the extreme right edge. Y is the vertical screen coordinate: Y=0 is the top and Y=191 is the bottom of the screen. Try using the "move" keys to locate the cursor at X=140 and Y=80.

So far, the bottom four lines of the screen have been displaying the current screen status (unless you accidently hit the V key). Go ahead and press the V key now. The "status window" will disappear and the entire screen will become available for you to use for drawing. To get the status window back, press the V key again. The V key is the command to switch back and forth between the "split-screen" and "full-screen" modes.

Look at the first line of the status display where it says "SHAPE #1". To put shape #1 on the screen, press the SPACE bar. The cursor will be replaced by a square block. This is shape #1. Now use the "move" keys to move the shape around the screen in the same way you moved the cursor. Press RETURN and the shape disappears. Press the SPACE bar once again to get the shape back in view and then press the right arrow → key once. The square is replaced by a smiling face and the status display now shows "SHAPE #2". This is the next shape of the shape table called "TUTORIAL SHAPES" that you loaded from the disk. Press → again to see the third shape, the PIXIT logo. Now use the arrow keys to scroll through the three shapes in the shape table.

"PLANTING" THE SHAPES

We have seen how to get a shape on the screen with the SPACE bar, move it with the "move" keys, and scroll through the shapes with the arrow keys. Next we are going to "plant" the shapes on

the screen and add some text to create the following picture:

Get the PIXIT logo (shape #3) on the screen. Then use the "move" keys to position it near the upper left corner of the screen. Now press the P key and then RETURN. This will make the shape a permanent feature of the screen. The flashing cursor will reappear to let you know that the shape has been "planted" and no longer under control of the "move" keys. NOTE: You must type P followed by RETURN to "plant" the shape. If you do not press RETURN, the P command will be ignored. This two keystroke sequence is required to prevent planting a shape by accidently hitting the P key. Erasing a shape that has been planted is a little more difficult than putting it there (more about this later). Now use the same procedure to plant the smiling face (shape #2) near the bottom right corner. Your screen should be looking more like the picture above.

ADDING TEXT TO YOUR PICTURE

Now we are going to add some text to the picture. Press RETURN to get the cursor back on the screen. Move the cursor to approximately the center of the screen and press the T key to enter the text mode. "ADD TEXT" will appear in the status window and the flashing cursor will be replaced by a flashing » (this is the text cursor). You are now ready to type a line of text directly from the keyboard. Type "PIXIT IS FUN" (if you make a mistake, press ESC and the entire line will be erased; then press T to get back into the text mode to retype the line). When you have correctly typed the line of text, press RETURN to make it a permanent part of the picture. The original hi-res cursor will reappear, ready for the next command. Move the cursor down 10 dots, then use the T key to

enter the text mode and type the line "AND EASY TO USE". When you are finished, press RETURN.

NOTE: If you type a line of text beyond the right edge of the screen, it will wrap around to the left edge.

ALSO NOTE: Once you press RETURN in the text mode, the ESC key will not erase the text. You will find options for erasing on page 21.

BACK TO THE FUNCTION MENU

If you have been following directions carefully, your screen should look like the example picture. Congratulations! You have just made your first PIXIT hi-res picture. Of course, there are many other features in the PICTURE EDITOR to learn but these will be covered in detail in the PICTURE EDITOR chapter.

When you have finished, press ESC to return to the FUNCTION MENU. There will be a brief pause to give you one last look at the picture and then the menu will reappear. At this point you may want to save your picture to disk. If so, place an initialized data disk in the drive, select the SAVE HI-RES PICTURE option, type a name for the picture, and press RETURN. Always be careful to save any work that you don't want to lose before starting a new picture! To get back to the hi-res screen without erasing your picture, select the EDIT PICTURE IN MEMORY option. To retrieve a hi-res picture from the disk, select the LOAD HI-RES PICTURE option. This is just like loading a shape table or character set. To start a new picture, select the CREATE PICTURE option. The previous picture will be erased and a blank editing screen will appear. If you have the proper printer connected to your Apple, you can get a hard-copy printout of your picture by selecting the PRINTER GRAPHICS DUMP option. Make sure the printer is on-line before selecting this option.

When you are finished with the PICTURE EDITOR program, make sure that the PIXIT program diskette is in drive 1 and select the QUIT PICTURE EDITOR option. This will get you back to the main PIXIT program menu.

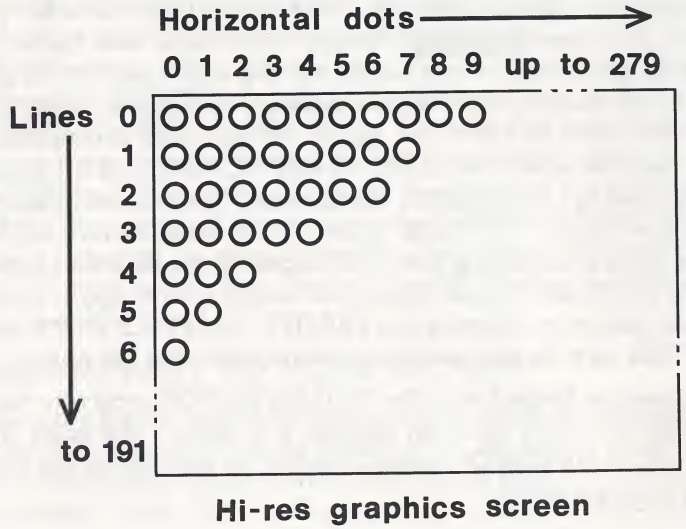
WHERE DO WE GO FROM HERE?

Mastering all of the features and tricks of PIXIT graphics processing will take some time and a little practice. Read through the entire manual, then "play" with the various PIXIT programs. Try anything that comes to mind. Sometimes the most creative results come from "accidents". Experimenting with different shapes and colors will teach you a lot about what an Apple can and cannot do.

A SHORT PRIMER ON APPLE GRAPHICS

This short discussion on Apple graphics is provided to help you understand some of the concepts and terms you will encounter while using the PIXIT programs. To get the most out of PIXIT, you should read everything you can find concerning Apple graphics. Some suggested titles are given at the end of this manual.

The Apple][high-resolution (or hi-res) graphics screen consists of 192 horizontal lines, each of which may contain up to 280 distinct dots. These dots are also called "pixels". The lines are numbered from 0 starting at the top of the screen down to line 191 at the bottom. The dots are numbered from 0 at the left edge of the screen over to 279 at the right edge.

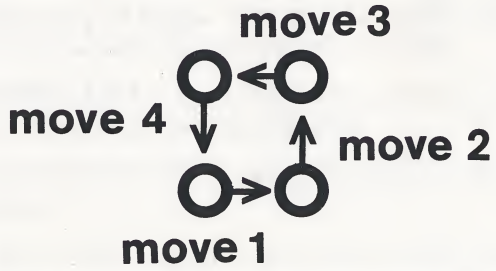


Pictures or images are formed by lighting up certain pixels on the screen. One way of visualizing this is to think of the hi-res screen as an electronic billboard made up of a grid or matrix of tiny lights. Placing an image on the billboard is simply a matter of turning on the right lights. There are several ways of turning on the "lights" on the Apple hi-res screen. For example, you could use the Applesoft Basic

command HPLOT 155,33 to light dot number 155 on line 33. Drawing a fairly complicated image by this method might require several hundred HPLOT commands (there are a total of 53,760 dots on the hi-res screen). Obviously, this is not a very efficient way to create pictures on the Apple.

A much better method is to make use of pre-defined shapes called "shape tables". Here, the term "shape" refers to any object or figure that you might want to place on the screen. A "shape table" is a set of data in the computer memory that contains the information necessary to plot the shape on the screen. Once the shape has been defined in a shape table, all that is necessary to draw the image on the screen is a single DRAW command from Basic (no matter how large the shape is). In addition, the shape may be placed anywhere on the screen, in different colors, rotated, or enlarged using simple commands, and even saved to disk for future use. A standard Applesoft shape table may contain a single shape or several different shapes.

The information in a shape table is actually a series of "vector" plotting moves that define the shape. Each vector defines whether or not to plot (light up) the current pixel, and which direction (up, down, left, or right) to move to find the next pixel in the shape. For example, a very small square could be defined as four vectors: (1) plot and move right, (2) plot and move up, (3) plot and move left, (4) plot and move down.



The encoding of vector moves into shape table data can be a very tedious and time consuming process, but fortunately you have PIXIT to do difficult work for you.

Let's get back to the electronic billboard analogy for a moment. If you wanted to put a colored image on the billboard, you would place colored lamps in the appropriate places. The Apple hi-res screen displays colors in much the same manner. Each pixel or dot that is lit has a color, but there are restrictions on which color a particular dot may display. There are actually only four colors available: purple, green, blue, and orange. All of the other colors on the Apple are produced by combining these four. Each individual dot can be displayed in two colors. Odd numbered dots on a line may be either green or orange. Even numbered dots may be either purple or blue. When two or more adjacent dots on a line are lit, the colors blend to form white. Thus, to get a blue horizontal line you would turn on the even numbered dots, and leave the odd numbered dots off.

There is another peculiarity about Apple colors. Purple and green form one color group. Blue and orange form another color group. Due to the way the colors are mapped on the hi-res screen, plotting a dot from one color group may cause nearby dots of the opposite color group to change color. This property is called "clashing" and it is one of the unavoidable realities of Apple graphics. There are times, however, when color clashing will actually enhance a picture by making certain features stand out.

All of this may sound somewhat complicated, but it will become second nature as you practice with the PIXIT programs. There is no better teacher than seeing it "live".

THE PICTURE EDITOR

The PICTURE EDITOR can be used to draw a full-screen hi-res picture using shape tables, hi-res text, lines, circles, and colorfill. It can also be used to edit an existing hi-res picture. Shapes can be displayed in different colors, scaled, rotated, and moved anywhere on the screen.

At each step of the picture drawing process, you will see the result before making that step a permanent part of the picture. For example, suppose you choose to fill an area of the picture with the colorfill routine. Then, if you decide that you don't like the color, you can press the ESC key to back out of the routine before the colorfill becomes permanent.

It is assumed that you have been through the Tutorial and read the chapter on Apple hi-res graphics. Some of the PICTURE EDITOR features were discussed in the Tutorial. Now we will examine all of the options in detail.

PICTURE EDITOR FUNCTION MENU

You should already be familiar with the PICTURE EDITOR function menu. Here is a summary of the available functions:

LOAD SHAPE TABLE Load a shape table from the PIXIT Shape Library or from your own data diskette.

LOAD CHARACTER SET Load a character set from the PIXIT Font Library.

CREATE PICTURE Display blank hi-res picture editing screen with flashing cursor and screen status window. This function will erase any hi-res picture already in memory.

CATALOG DISK Will display a catalog listing of the files on the disk drive selected.

CHANGE DISK DRIVE If you have two disk drives, select this option and press RETURN to change from one drive to the other.

EDIT PICTURE IN MEMORY Display hi-res editing screen without erasing the current picture in memory. Use this function when you have loaded a hi-res picture from disk to be edited.

LOAD HI-RES PICTURE Load a hi-res picture from your data diskette for further editing.

SAVE HI-RES PICTURE Save a hi-res picture to your data disk.

PRINTER PICTURE DUMP Send hi-res picture currently in memory to printer for hard copy. Make sure printer is turned on and ready to print.

QUIT PICTURE EDITOR Return to the PIXIT program menu. PIXIT program diskette must be in disk drive 1.

THE STATUS WINDOW

You can get to the hi-res picture editing screen using either the CREATE PICTURE or EDIT PICTURE IN MEMORY options. In either case you will see a flashing cursor at the center of the screen and a text window at the bottom of the screen that shows the current status of the screen. The parameters displayed in this status window are identical to those used in Applesoft Basic. Let's take a look at each of these parameters and see what they mean:

SHAPE # This is the number of the shape being displayed from the shape table in memory. If no shape table was loaded, SHAPE #0 will be shown.

X The current horizontal position of the cursor.

Y The current vertical position of the cursor.

SCALE Indicates the relative size of the shape. Shapes can be displayed up to 5 times the original size.

ROT Indicates the rotation factor of the shape. Values range from 0 to 63. ROT=0 draws a shape in its original orientation. ROT=16 draws the shape 90 degrees clockwise. ROT=32 draws the shape upside down. The possible values for ROT increase as the SCALE is increased.

HCOLOR This determines the color that a shape, line, or circle is drawn to the screen. The colors available on the Apple are:

0 = BLACK1	4 = BLACK2
1 = GREEN	5 = ORANGE
2 = PURPLE	6 = BLUE
3 = WHITE1	7 = WHITE2

NOTE: Using different values of HCOLOR can occasionally produce quite unexpected results. This is because the Apple will plot a given color only at certain dot positions. HCOLOR values of 1, 2, 5, and 6 may cause lines and parts of shapes to disappear completely depending on the screen location. HCOLOR=0 and HCOLOR=4 can be especially confusing unless there are some background colors to draw against. There is also the possibility of "clashing" when you try to place colors 0 through 3 close to colors 4 through 7.

XDRAW and DRAW You may have noticed that the shapes sometimes cancel each other as you move them around the screen. This cancellation is a property of the XDRAW mode. When you switch to the DRAW mode, there are no more cancellations.

XDRAW will place a shape on the screen in the inverse color of the background.

DRAW will place a shape on the screen regardless of the color of the background.

When you press a command key to change one of the screen parameters, that parameter will be highlighted until you have completed the command by pressing RETURN or another command key. The status window will also indicate if you are in the DRAW LINE, DRAW CIRCLE, ADD TEXT, or COLOR FILL modes.

PICTURE EDITOR COMMANDS

There are several command keys used in the PICTURE EDITOR. When you are working on a picture you can press / or ? to display a help screen which lists the commands. Then press / or ? again to return to the picture editing screen.

Pressing the ESC key will display the entire hi-res screen for a moment and then return you to the function menu. There you can load a different shape table or character set if you like, or save your hi-res picture to your data disk. By the way, it is a good idea to save your picture at various stages of completion just in case there is an "accident" (like a power outage or you select CREATE PICTURE when you meant to EDIT PICTURE IN MEMORY)!

The ESC key is also used to back out of the DRAW LINE, DRAW CIRCLE, ADD TEXT, and COLOR FILL modes and restore the picture to its condition before the command was selected. NOTE: This only works if you press ESC before completing the command with RETURN.

Here is a description of the available commands:

Move the cursor or shape 10 pixels (or dots) in the direction of the arrow.

Move the cursor or shape one pixel (or dot) in the direction of the arrow.

SPACE Display the shape. Use the ← and → keys to scroll through the shape table. This command will work only if you have loaded a shape table.

X Pressing the X key will switch back and forth between the XDRAW and DRAW modes. XDRAW will always draw the shapes in the inverse of the background.

V Pressing the V key will switch back and forth between the SPLIT SCREEN and FULL SCREEN modes.

C Change the current HCOLOR. Use the ← and → keys to select the HCOLOR value. HCOLOR will not affect shapes in the XDRAW mode.

Y Change the SCALE of the shape. Use the ← and → keys to select the SCALE value between 1 and 5 times actual size.

R Change the rotation of the shape. Use the ← and → keys to select the ROT value. NOTE: If the SCALE is changed, the rotation will revert back to ROT=0.

P Press the P key and then RETURN to "plant" the shape. The shape will become a permanent part of the picture.

L This is the DRAW LINE command. To add a straight line to your picture, move the cursor to the point where you want the line to start and press L. Use the "move" keys to locate the point where you want the line to end. The line will always follow the cursor as if it were being stretched between the two points. When you get the line the way you want it, press RETURN to "plant" the line. ESC can be used to back out of this mode and return the cursor to its starting position.

O This is the DRAW CIRCLE command. Move the cursor to the point where you want the center of the circle and press O (not zero). Then type a radius value from 1 to 99 and press RETURN. After the circle is drawn, press RETURN again to "plant" the circle. ESC can be used to back out of this mode.

T This is the ADD TEXT command. This command will work only if you have loaded a character set from the disk. To add a line of text to your picture, move the cursor to the point where you want the text to start and press T to get the flashing text cursor. Then type the line of text directly from the keyboard. To get lower case on the Apple][+ press the ← key before typing the characters. Press the → key to return to upper case mode. When you have finished (with no mistakes), press RETURN to "plant" the text. ESC can be used to exit this mode without planting the text; the entire line will disappear and the cursor will return to its starting location. NOTE: If you type beyond the right edge of the screen, the text will wrap-around to the left edge. XDRAW/DRAW will affect this mode.

F This is the COLOR FILL command. Press the F key to fill an enclosed area around the cursor with color. The editing screen will be replaced by a menu of colors and patterns. Use the ← and → keys to select one of the colors and then press RETURN. The picture will reappear and the enclosed area will be filled. Press RETURN again to "plant" the color or ESC to erase it and restore the picture to its original condition.

ERASING SHAPES AND TEXT

Once a shape has been "planted" to the background there are several methods to erase it. You can use the cancellation property of XDRAW to erase a shape. Just XDRAW an identical shape directly over the one to be erased, and then use P and RETURN to make the cancellation permanent.

Another technique is to plant a black shape (the same shape you are trying to erase) directly over the shape. In other words, get the DRAW mode with the X key, put a shape identical to the one you want to erase on the screen and place it directly over the planted shape, use the C key to set HCOLOR = 0 or 4, and then press P and RETURN to permanently erase the shape.

A similar method (which can also be used to erase part of a shape or any other detail in the picture) is to get a shape that is about the

same size as the detail that you want to remove. Select the DRAW mode and place the shape at the spot to be erased. Set HCOLOR = 0 or 4 and then use P RETURN to plant a "black hole" in your picture. There is a shape table called "PAINTS AND PATTERNS" in the PIXIT shape library that has many shapes which work well with this method.

Text can be erased by carefully positioning the cursor at the lower left edge of the line of text (this must be the exact place that the line was originally typed). Select the XDRAW mode and the ADD TEXT mode. Now retype the line (it will be XDRAWN off the screen) and press RETURN.

You can also use the "black hole" method described above to delete text. Use a solid square shape about the same size as the text for your black eraser.

PIXIT CREATE-A-SHAPE

The CREATE-A-SHAPE program lets you design your own hi-res shapes directly from the keyboard. There is also a special feature called SHAPE SOURCEROR which can be used to analyze or modify pre-drawn shapes. Scale and grid options provide a magnified display for easy editing of fine details and proportions. Details within the shape can be changed without having to redraw the entire shape. The completed shape is compiled into a standard Applesoft shape table which can be saved to disk and combined with other shapes using the SHAPE TABLE EDITOR.

CREATE-A-SHAPE FUNCTION MENU

When you run CREATE-A-SHAPE from the main program menu the following function menu will appear:

As with the other menus, the ESC key will let you back out of an option. Here is a summary of the available functions:

CREATE NEW SHAPE Display hi-res shape plotting screen and flashing cursor ready to plot new shape. This will erase any file already in memory.

COMPILE SHAPE TABLE Change vector move file into Applesoft shape table, display shape, and save shape to disk.

REVIEW & EDIT SHAPE IN MEMORY Display hi-res shape plotting screen and draw shape file in memory.

CATALOG DISK Will display a catalog listing of the files on the disk drive selected.

CHANGE DISK DRIVE If you have two disk drives, select this option and press RETURN to change from one drive to the other.

SHAPE SOURCEROR Will prompt you to load a shape table from the disk and then select a shape from the table for editing.

QUIT CREATE-A-SHAPE Return to PIXIT program menu. PIXIT program disk must be in drive 1.

CREATING A NEW SHAPE

Select the CREATE NEW SHAPE function to draw a shape. The first thing you will see is a prompt to choose a drawing scale:

```
DRAWING SCALE:  1 TIMES ACTUAL SIZE
```

The drawing screen will be magnified by whatever scale you select here. The choices range from 1 to 7 times actual size. Use the ← and → keys to select a scale and then press RETURN. It is usually best to start with a larger value for the drawing scale so that the details of the shape will be easier to see. You can always go back and change the scale whenever your shape gets too large for the screen.

If you have selected a drawing scale of 3 or greater, you will be given the option of using a grid as a drawing aid:

```
GRID OPTIONS:   WITH GRID
                WITHOUT GRID
```

In most cases, a grid is desired. Again, use the arrow keys and RETURN to make your choice.

Finally, you must select the position on the screen where you will begin plotting the shape:

```
STARTING LOCATION ON SCREEN:

                TOP LEFT
                LEFT CENTER
                BOTTOM LEFT
                CENTER
```


The best starting position will depend a lot on how and where the shape will be used. As you experiment with shapes and shape tables you will get to know which choice is best for your own application. The shapes in the PIXIT shape library are usually drawn from LEFT CENTER or BOTTOM LEFT.

After you have selected the scale, grid, and starting location options, the plotting screen will appear:

The grid dots will appear only if you have selected the grid option. There will be a flashing cursor waiting for you to make the first move. Right below the plotting screen will be "MOVE #1". Since shapes are defined by a series of vector moves, the current move number is displayed here. The maximum number of moves allowed in one shape is approximately 8,000 (you will probably never draw a shape with this many moves). At the very bottom of the screen you are reminded that you can press ? or ? for a help screen or ESC to get back to the function menu. If you do press ESC to exit, the shape that you are working on will remain in memory. You can get back to the editing screen without losing your shape by selecting the REVIEW & EDIT SHAPE IN MEMORY function.

THE MOVE COMMANDS

There are two sets of keys that move the cursor and plot the shape. The I, J, K, and M keys will plot the square at the cursor and then move the cursor one square. The A, W, S, and Z keys will

move the cursor one square without plotting:

These keys move the cursor one square in the direction of the arrow without plotting

These keys plot the square at the cursor and move the cursor in the direction of the arrow

Each time you press one of the "move" keys you are adding one vector move to the shape and the move is placed in a "file" of moves in the computer memory. Since every move is added to the file (whether plotting or non-plotting), you should try to plot your shape using the fewest number of vector moves to conserve memory.

THE EDITING COMMANDS

The editing commands allow you to go back into the middle of your shape to make changes. Editing a file of vector moves can be tricky because each vector is dependent on all of the vector moves that preceed it. If you change the direction of a vector in the middle of a file, all of the moves that follow will be shifted in the same direction. With a little practice, however, you should find the editing commands quite useful. The control key is required to prevent you from accidently hitting an editing command while you are plotting the shape. Here is a description of the commands:

← Each time you press the left arrow ← key, the cursor will move one step backward through the file in memory. It does not delete any move from the file, it just steps the cursor back, retracting the previous moves. When you accidently make a wrong move, you can back up using the ← key and correct the move.

→ The right arrow → key will step the cursor forward one move, tracing the file in memory. When you get to the last move of the file, an "END OF FILE" message will appear.

CTRL-B This will move the cursor all the way back to the beginning of the move file. It will clear the plotting screen but does not erase the file in memory. Use either the → or CTRL-E commands to trace forward through the file and replot the shape.

CTRL-E If the cursor is at the beginning or middle of a file, you can press CTRL-E to trace forward (replotting the shape) all the way to the end of the file in memory. This automatic trace feature can be stopped at any point in the file by pressing the SPACE bar.

CTRL-X This will let you change the drawing scale, grid option, or starting location at any time without disturbing the file in memory. When you have finished making these changes, the plotting screen will reappear and the shape will be retraced in the new scale.

CTRL-F This will mark the current cursor position as the last move of the shape and erase all moves that follow. It is used to delete unwanted moves from the end of the file in memory.

When you get to the edge of the plotting screen and attempt a move that would put the cursor off the screen, a "SCREEN BOUNDARY" message will appear at the bottom of the screen. If you run into a screen boundary while plotting your shape, use the CTRL-X command to select a smaller drawing scale.

SOME HELPFUL HINTS

You should spend some time practicing and getting to know the various commands before you attempt any serious shape plotting. Start with simple shapes like squares and rectangles and work your way up to more complex shapes.

When you want to change one of the moves in the middle of the file from plot to no-plot (or vice-versa), be careful to make the change in the same direction as the original move. For example, if you want to change a "plot up" vector to a non-plotting move, make sure you use the "no-plot up" command when making the change.

Lines that cross over each other can be confusing. If you should happen to PLOT over a square that has been previously plotted, you will UN-PLOT that square. The solution to this problem is to use a no-plot move to cross over an already plotted point. Whenever possible, try to plan ahead and avoid crossovers in your shape.

After editing a shape (especially one that has lines that cross over), it is a good idea to use the CTRL-B and CTRL-E sequence to review the shape before compiling the shape table.

COMPILING THE SHAPE TABLE

When you are finished plotting your shape, press ESC to get back to the function menu. Then select the COMPILE SHAPE TABLE option to change the file of vector moves into standard Applesoft shape table. The shape will be drawn in actual size on the hi-res screen with the starting address and length in bytes displayed below. If you are satisfied with the shape and wish to save it, type a name for the shape, place your data disk in the drive and press RETURN. Otherwise, press ESC to return to the function menu.

SHAPE SOURCEROR

The SHAPE SOURCEROR option will let you load a shape table and then analyze or modify any of the shapes in the table. This can be a great way to learn how the PIXIT Shape Library shapes were drawn. Insert a disk containing the shape table that you wish to use and select the SHAPE SOURCEROR function. You will be prompted to load one of the shape tables from the disk. Make your selection and press RETURN. If there is more than one shape in the table, Shape #1 will be displayed on the hi-res screen. You can use the arrow keys to scroll through the shapes in the table and then press RETURN to select one of them. An optimum drawing scale and starting location will be automatically determined and the shape will be plotted on the editing screen. The editing and move commands work just as if you had plotted the shape yourself. You can modify the shape and save it to disk if you like.

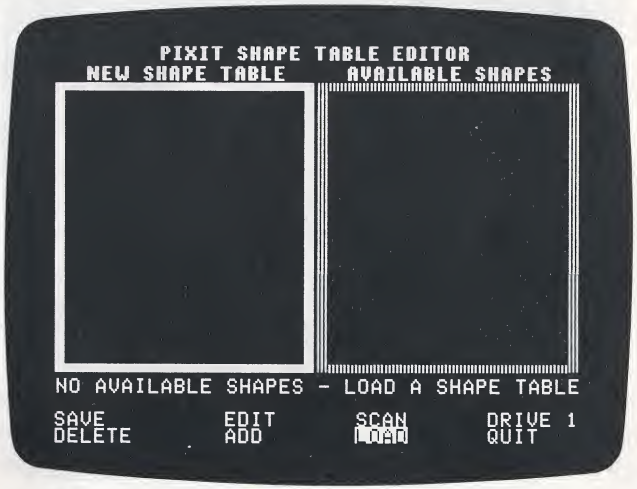
PRE-COLORED SHAPES

You may have noticed that many of the shapes in the PIXIT Shape Library have built-in colors, even when they are drawn on the screen with HCOLOR = 3 (white). The secret is to plot the shapes with patterns that force colors in certain areas. You should use the SHAPE SOURCEROR to analyze these shapes and find out how to use this technique in your own shapes.

PIXIT SHAPE TABLE EDITOR

THE SHAPE TABLE EDITOR is used to build shape tables of up to 128 shapes. These shapes can be from the PIXIT CREATE-A-SHAPE program or any other standard Applesoft shape table, including any of those from the PIXIT shape library. The editing is done graphically so you can see each shape as it is added to the table. Shapes may be added (or deleted) anywhere in the table at any time. Several smaller shape tables can be spliced together to make one large table.

When you run the SHAPE TABLE EDITOR from the main program menu, the following screen will appear:

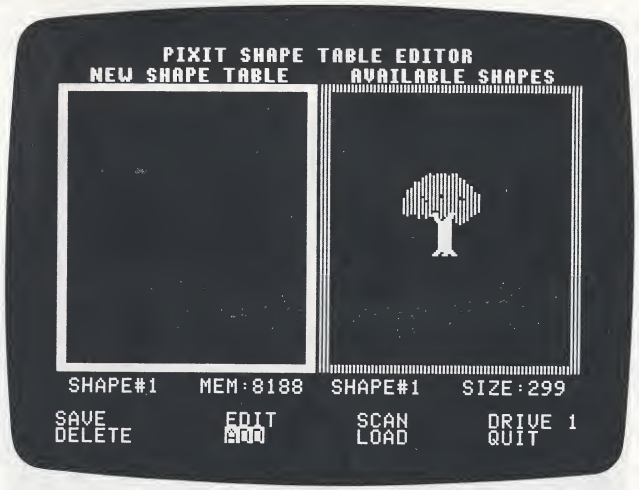


This is the only screen used in the SHAPE TABLE EDITOR. Since there are no additional commands, there is no help screen. All of the functions are displayed at the bottom of the screen. The ← and → keys are used to scroll through the menu and the RETURN key will select the desired option. You can use the ESC key to back out of LOAD and SAVE options.

There are two large boxes or "windows" labeled NEW SHAPE TABLE and AVAILABLE SHAPES. The object is to load a shape table

from the disk into the AVAILABLE SHAPES box, and then move shapes from this box over to the NEW SHAPE TABLE box to build up your shape table. A different shape table can be loaded into the AVAILABLE SHAPES box at any time without disturbing the NEW SHAPE TABLE. These shapes can be added to the NEW SHAPE TABLE in any order and at any position in the new table.

Notice the message below the boxes: "NO AVAILABLE SHAPES — LOAD A SHAPE TABLE". Nothing can be done with this program until a shape table has been loaded in. Place a disk containing the shapes that you want to load in the drive. This can be the PIXIT diskette if you want to use some of the PIXIT pre-drawn shapes in your new shape table. The load routine works the same as the other programs. When the shape table is loaded, the menu will reappear with some new screen information under the boxes:



The NEW SHAPE TABLE box will be blank with "SHAPE #1" beneath it. This tells you that there is no shape in position #1 of the new shape table. Also under the NEW SHAPE TABLE box is "MEM:8188". This tells you that there are approximately 8K bytes of free memory in the NEW SHAPE TABLE. As shapes are added to the table this figure will decrease until the free memory is used up.

The AVAILABLE SHAPES box should now have a shape showing and "SHAPE #1" below the box. This tells you that the shape shown is the first shape in the box of AVAILABLE SHAPES. At the bottom right of this box you will see "SIZE:" followed by some number. This is the size (in bytes) of the shape visible in the AVAILABLE SHAPES box.

SHAPE TABLE EDITOR FUNCTIONS

Once the shapes are loaded into the AVAILABLE SHAPES box, you are ready to start building your NEW SHAPE TABLE. Let's take a look at the function options and how they are used:

Select this option to load a shape table from the PIXIT Shape Library or your own data disk. The ESC key can be used to back out of this routine.

SCAN

The SCAN function is used to select a different shape in the AVAILABLE SHAPES box. This allows you to add shapes to your NEW SHAPE TABLE in any order. Select the SCAN function on the menu and press RETURN. The "SHAPE #" beneath the AVAILABLE SHAPES box will be highlighted to indicate the SCAN mode. Then use the ← and → keys to "scan" through the AVAILABLE SHAPES until the desired shape appears in the AVAILABLE SHAPES box and press RETURN again to get back to the function menu. Note that the SCAN function does nothing when there is only one shape in the AVAILABLE SHAPES box.

ADD

This function moves the shape that is currently visible in the AVAILABLE SHAPES box over to the NEW SHAPE TABLE box. Select the ADD function and press RETURN. The shape will appear briefly in the NEW SHAPE TABLE box to let you know that the shape has been added to the table. It will then disappear as the SHAPE # is incremented in preparation for the next shape to be added to the table.

If there was only one shape in the AVAILABLE SHAPES box you will be prompted to load another shape table. Otherwise, the next available shape will appear in the AVAILABLE SHAPES box.

EDIT

The EDIT function works exactly like the SCAN function except that it affects the NEW SHAPE TABLE box. Use EDIT when you want to delete or insert a shape at the middle of the NEW SHAPE TABLE. Select EDIT on the function menu and press RETURN. The "SHAPE #" beneath the NEW SHAPE TABLE box will be highlighted to indicate EDIT mode. Use the ← and → keys to scroll through the NEW SHAPE TABLE until you have found the shape you wish to delete, or the place where you wish to add a shape, then

press RETURN. Now when you use the ADD or DELETE functions, the operation will affect the shape currently visible in the NEW SHAPE TABLE box. There must be at least one shape in the NEW SHAPE TABLE box for the EDIT function to work.

NOTE: Each shape will be added at the end of the NEW SHAPE TABLE unless you have used the EDIT mode to move to the middle of the table. When you ADD a shape to the middle of the table, the current shape and those that follow will move up one number. For example, to insert a shape between SHAPE #2 and SHAPE #3, use the EDIT function to display SHAPE #3 in the NEW SHAPE TABLE box. Then ADD the shape from the AVAILABLE SHAPES box. The added shape will become #3 and the original SHAPE #3 will become SHAPE #4, etc.

DELETE

DELETE is used to remove a shape from the NEW SHAPE TABLE. To use this function, first find the shape to be deleted using the EDIT mode. Then set the menu selection to DELETE and press RETURN to remove the shape from the table. Any shapes that follow the deleted shape will be moved down to fill the gap. For example, if you deleted SHAPE #5, the previous SHAPE #6 would become SHAPE #5 (now visible in the NEW SHAPE TABLE box).

SAVE

Before saving your shape table, it is a good idea to use the EDIT function to review the shapes in the table. When you are ready to save, insert your data disk, select the SAVE option, and press RETURN. Type a filename for the NEW SHAPE TABLE and press RETURN again to save the table.

After the shape table has been saved, you will be asked if you want to "BUILD ANOTHER SHAPE TABLE (Y/N)?". If you press Y (yes) the NEW SHAPE TABLE box will be cleared and you will be ready to start another shape table. If you press N (no), you will be returned to the menu without clearing the existing NEW SHAPE TABLE. From here you can either QUIT or do some additional editing on the NEW SHAPE TABLE in memory.

QUIT SHAPE TABLE EDITOR

When you have finished using the SHAPE TABLE EDITOR select QUIT and press RETURN to get back to the PIXIT program menu. The PIXIT program diskette should be in disk drive 1.

HOW TO USE SHAPE TABLES

Using shape tables in your own programs is really quite easy. The basic commands are simple and powerful and you can produce spectacular results with just a few program lines. A single XDRAW command will plot or erase a shape anywhere on the hi-res screen. There are a few things you must do, however, before you can DRAW or XDRAW shapes from your own program. The following example illustrates the necessary steps.

```
10 PRINT CHR$ (4); "BLOAD ST. ANIMATION SHAPES"
20 POKE 232,0: POKE 233,96
30 SCALE= 1: ROT=0: HCOLOR= 3: HGR
```

These are the first three lines of an Applesoft Basic program called "ANIMATION EXAMPLE 1" on the PIXIT disk. Let's examine each of the lines to see what they do:

Line 10 loads a shape table named "ST. ANIMATION SHAPES" from the disk. Shape tables are binary files and must be BLOADed.

Line 20 tells Applesoft where the shape table is located in memory. Unless a different address is specified during the BLOAD, the PIXIT shape tables will load at address 24576 (or $6000 in hex). If the shape table is loaded at some other address, the following pokes must be used (address = A):

```
POKE 232,A — 256 * INT (A / 256)
POKE 233, INT(A / 256)
```

Line 30 sets the scale, rotation, and color for the shapes, and then displays a clear hi-res graphics screen.

If you want to see this program in action, select the QUIT option on the PIXIT program menu. Then type RUN ANIMATION EXAMPLE 1 and press RETURN. To stop the animation, press CTRL-C. You should list the program to see just how simple an animation routine in Basic can be. There are other Applesoft example programs on the disk that illustrate the use of shape tables. You can learn a lot by running and analyzing these programs.

PROGRAM NOTES

WHAT'S IN A FILENAME?

When you save a shape table or hi-res picture to the disk, a prefix is automatically added to the filename you supply. This is done so that PIXIT can identify the different types of files. Do a catalog listing of the PIXIT disk to see how this works. The following convention is used for filename prefixes:

ST. Shape Table
CS. Character set
PI. Hi-res picture

If you want to use a shape table from another program in the PIXIT programs, you must first rename the shape table file to include the "ST." prefix. For example, if you had a shape table called "SHAPES" from another program, you would have to rename it "ST.SHAPES" to use it in PIXIT. Hi-res pictures from other programs must have the "PI." prefix before they can be loaded into the PICTURE EDITOR.

MEMORIES ARE MADE OF THIS

The PIXIT programs reserve specific memory locations for each of the file types. This is of special interest to programmers:

Hi-res pictures are standard 34 sector disk files and are loaded at Hi-res page 2, address 16384 (hex $4000).

Shape tables start at address 24576 (hex $6000).

Character sets start at address 32768 (hex $8000).

NOTE: Because of the tight memory requirements of the PICTURE EDITOR, the colorfill routine may be written over by a very large shape table. When this happens, and you press the F (colorfill) command, PIXIT will reload the colorfill routine before displaying the color selection menu. If the PIXIT disk is not in drive 1, you will be prompted to insert it. Normally, this will not occur using shape tables from the PIXIT Shape Library.

HOW TO MAKE A BACK-UP COPY OF PIXIT

For your convenience and maximum utility, PIXIT programs can be listed and even modified to suit your own needs. In order that we may continue to provide high-quality unlocked software at a reasonable price, we request that you make back-up copies for your personal use only.

PIXIT uses a non-standard fast loading boot program, so the usual disk copy programs will not work. Use the following procedure to make a working back-up copy of PIXIT:

(1) Boot the PIXIT program diskette. When the PROGRAM MENU appears, select the QUIT option.

(2) When the] prompt appears, type: LOAD MENU

(3) Remove the PIXIT diskette and insert your blank backup diskette.

(4) Type: INIT MENU

(5) Use the FID program from the DOS system master (or any other file copy program) to copy all of the files from the PIXIT diskette to your backup diskette.

RECOMMENDED READING

There are a number of books and magazines available that cover various aspects of Apple graphics. Here are a few selected titles.

BOOKS:

Apple][Basic Programming Manual,
Apple Computer Inc., Cupertino, CA.

Apple][User's Guide, by Lon Poole,
Osborne/McGraw-Hill, Berkeley, CA.

Apple][Computer Graphics, by Ken Williams,
Robert J. Brady Co., Bowie, MD.

Apple Graphics & Arcade Game Design,
by Jeffrey Stanton, The Book Co., L.A., CA.

MAGAZINES:

Softalk

Softside

Call-A.P.P.L.E.

Micro

Apple Orchard

SCREEN MESSAGES

The PIXIT programs keep you informed when there is a problem. This section lists and describes the messages that you may encounter. The most common problems occur while loading or saving to the disk:

OOPS! DISK PROBLEM

This indicates an unsuccessful attempt to load or save. Check your disk drive. Some possible causes are: The disk drive door is open, no disk is in the drive, the disk is not initialized, or the disk is defective.

WRITE PROTECTED

You have tried to save to a write protected disk.

DISK FULL

There is no more room to store files on the disk.

FILE LOCKED

You have attempted to save using the name of an existing locked file on the disk.

THERE ARE NO SHAPE TABLES ON THIS DISK

There are no shape tables with the "ST." prefix on the disk. A similar message is used for hi-res pictures and character sets.

INSERT PIXIT PROGRAM DISKETTE IN DRIVE 1 AND PRESS RETURN

The PIXIT disk must be in drive 1 when attempting to return to the main program menu. May occur during PICTURE EDITOR colorfill routine, see the Program Notes for explanation.

The CREATE-A-SHAPE program messages:

SCREEN BOUNDARY

You have attempted to move beyond the edge of the plotting screen. Select a smaller drawing scale.

FILE BUFFER FULL

You have reached the maximum number of moves allowed.

END OF FILE

You have reached the last move of the current file.

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BAUDVILLE is an association of independent software artists. We are dedicated to providing personal computing products that are fun but not without purpose. If you share that vision and would like to see your own ideas develop in a supportive environment, please contact us.

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